

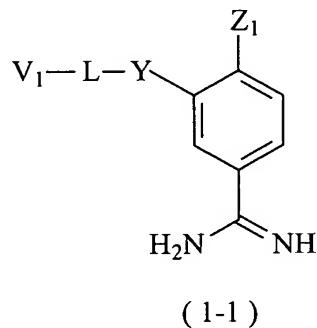
U.S. Application No. 10/073,985
Reply to Office Action dated July 28, 2003

IN THE CLAIMS

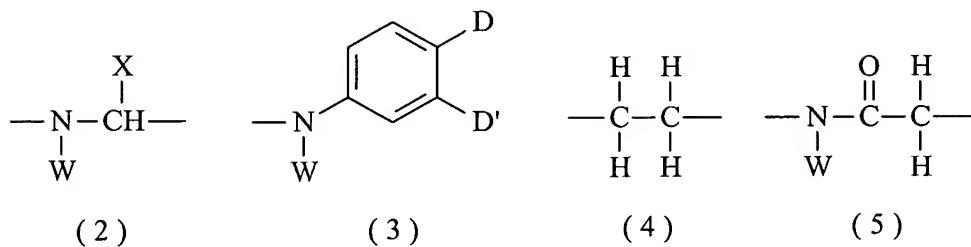
This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (canceled).

Claim 28 (currently amended): A composition comprising:
a) one or more benzamidine compounds of the following formula (1-1) or a pharmaceutically acceptable salt thereof:



wherein L represents an organic group of any of the following formulae (2) to (5):



wherein W in formulae (2), (3) and (5) represents a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, an aryl group having 4 to 10 carbon atoms or an aralkyl group having 5 to 12 carbon atoms, one of D and D' in formula (3) represents a bond to Y in general formula (1-1) and the other represents a hydrogen atom,

X in formula (2) represents a hydrogen atom, carboxyl group, an alkoxycarbonyl group having 1 to 3 carbon atoms, an alkyl group having 1 to 3 carbon atoms, which optionally has a substituent(s), or a benzyl group which optionally has a substituent(s); wherein the substituent(s) is selected from the group consisting of a carboxyl group, alkoxycarbonyl groups having 2 to 8 carbon atoms, alkylsulfonyloxy groups having 1 to 6 carbon atoms, piperidyloxy group, iminoalkylpiperidyloxy groups having 6 to 10 carbon atoms, alkoxycarbonylpiperidyloxy groups having 7 to 14 carbon atoms, piperidylalkyl groups having 6 to 8 carbon atoms, iminoalkylpiperidylalkyl groups having 7 to 11 carbon atoms, alkoxycarbonylpiperidylalkyl groups having 8 to 15 carbon atoms, pyrrolidinyloxy group, iminoalkylpyrrolidinyloxy groups having 5 to 9 carbon atoms, alkoxycarbonylpyrrolidinyloxy groups having 7 to 13 carbon atoms, amidino group, mono- or

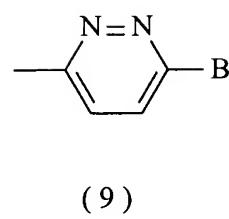
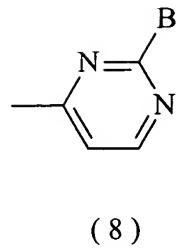
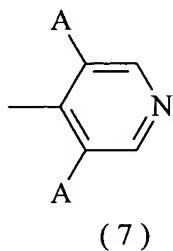
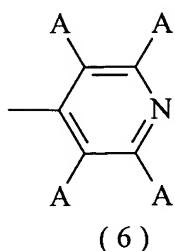
U.S. Application No. 10/073,985
Reply to Office Action dated July 28, 2003

dialkylamidino groups having 2 to 7 carbon atoms, hydroxyl group, halogeno groups, indolyl group and alkyl groups having 1 to 3 carbon atoms, X and W in formula (2) may be bonded together to form a ring and, in this case, -W-X- represents an ethylene group, trimethylene group or tetramethylene group,

when L is an organic group of any of formulae (2) to (4), V₁ represents a hydrogen atom, benzoyl, benzenesulfonyl, 2-naphthalenesulfonyl, piperazinecarbonyl, cinnamoyl, piperidinecarbonyl, 4-methylthiazole-5-carbonyl, phenylacetyl, phenylthiocarbonyl or benzimidoyl group, which optionally has a substituent(s), or an alkanesulfonyl group having 1 to 6 carbon atoms, which optionally has a substituent(s), and when L is an organic group of formula (5), V₁ represents an aryl group having 4 to 10 carbon atoms, which optionally has a substituent(s),

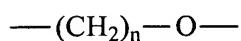
when L is an organic group of any of formulae (2) to (5) and V₁ has a substituent(s); wherein the substituent is selected from the group consisting of carboxyl group, alkoxy carbonyl groups having 2 to 7 carbon atoms, carbamoyl group, mono- or dialkylcarbamoyl groups having 2 to 7 carbon atoms, amidino group, mono-or mono- or dialkylamidino groups having 2 to 7 carbon atoms, acyl groups having 1 to 8 carbon atoms, halogeno groups, amino group, mono- or dialkylamino groups having 1 to 6 carbon atoms, arylamino groups having 4 to 6 carbon atoms, alkoxy carbonylamino groups having 2 to 7 carbon atoms, aminoalkyl groups having 1 to 3 carbon atoms, mono- or dialkylaminoalkyl groups having 2 to 7 carbon atoms, N-alkyl-N-alkoxycarbonylaminoalkyl groups having 4 to 10 carbon atoms, piperidyloxy group, iminoalkylpiperidyloxy groups having 6 to 10 carbon atoms, alkoxy carbonylpiperidyloxy groups having 8 to 14 carbon atoms, pyrrolidinyloxy

group, iminoalkylpyrrolidinyloxy groups having 5 to 9 carbon atoms, alkoxycarbonylpyrrolidinyloxy groups having 7 to 13 carbon atoms, hydroxycarbonylalkyl groups having 2 to 7 carbon atoms, alkoxycarbonylalkyl groups having 3 to 8 carbon atoms, hydroxycarbonylalkenyl groups having 3 to 7 carbon atoms, alkoxycarbonylalkenyl groups having 4 to 8 carbon atoms, aryl groups having 4 to 10 carbon atoms, arylalkenyl groups having 6 to 12 carbon atoms, alkoxy groups having 1 to 10 carbon atoms, nitro group, trifluoromethyl group, alkyl groups having 3 to 8 carbon atoms, arylsulfonyl groups having 4 to 10 carbon atoms, arylalkyl groups having 5 to 12 carbon atoms, piperazinecarbonyl group, iminoalkylpiperazinecarbonyl groups having 7 to 10 carbon atoms, piperazinesulfonyl group, iminoalkylpiperazinesulfonyl groups having 6 to 9 carbon atoms, piperidylalkyl groups having 6 to 9 carbon atoms, iminoalkylpiperidylalkyl groups having 8 to 12 carbon atoms, piperidylidenealkyl groups having 6 to 9 carbon atoms, iminoalkylpiperidylinealkyl groups having 8 to 12 carbon atoms, guanidino group, dialkylguanidino groups having 3 to 5 carbon atoms, phosphono group, dialkoxyphosphoryl groups having 2 to 9 carbon atoms, monoalkoxyhydroxyphosphoryl groups having 1 to 4 carbon atoms, trialkylamidino groups having 4 to 7 carbon atoms, dialkoxybenzoyl groups having 9 to 13 carbon atoms, 1-alkylpyridinio groups having 6 to 9 carbon atoms and groups of the following formulae:

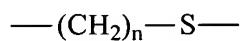


wherein A in formulae (6) and (7) represents a halogeno group, and B in formulae (8) and (9) represents a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, a halogeno group or amino group,

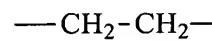
Y represents any of following formulae (10) to (16):



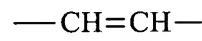
(10)



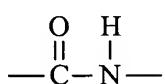
(11)



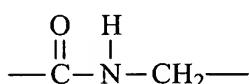
(12)



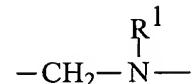
(13)



(14)



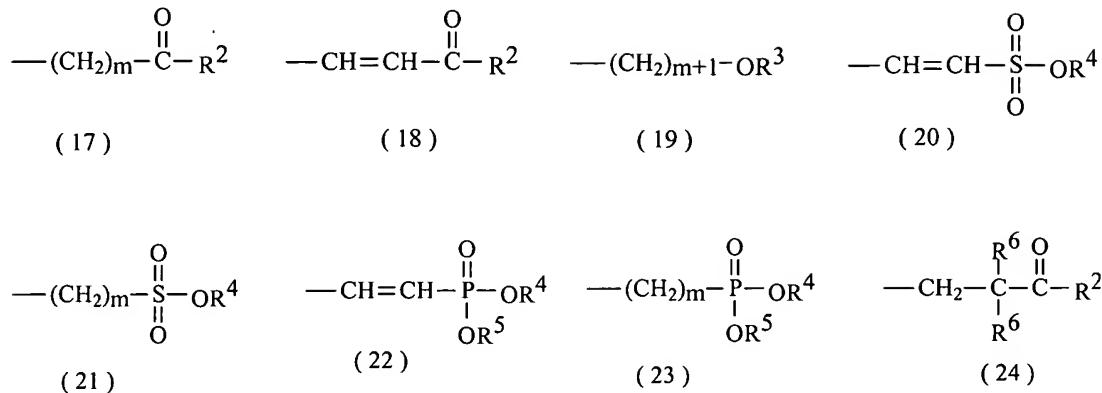
(15)



(16)

wherein n in formulae (10) and (11) represents an integer of 0 to 2, R¹ in formula (16) represents a hydrogen atom, a hydroxycarbonylalkyl group having 2 to 7 carbon atoms, an alkoxy carbonylalkyl group having 3 to 8 carbon atoms or a hydroxycarbonylalkenyl group having 3 to 7 carbon atoms,

Z₁ represents a group of any of following formulae (17) to (24):



wherein m in formulae (17), (19), (21) and (23) represents an integer of 0 to 3, R² in formulae (17), (18) and (24) represents a hydroxyl group, an alkoxy group having 1 to 5 carbon atoms, trifluoromethyl group, amino group or a mono- or dialkylamino group having 1 to 6 carbon atoms, R³ in formula (19) represents a hydrogen atom, an alkyl group having 1 to 6 carbon atoms or acetyl group, R⁴ in formulae (20) to (23) represents hydrogen atom or an alkyl group having 1 to 6 carbon atoms, R⁵ in formulae (22) and (23) represents a hydrogen atom or an alkyl group having 1 to 6 carbon atoms, and R⁶ in formula (24) represents a halogeno group; and

b) a pharmaceutically acceptable carrier.

Claim 29 (previously presented): The composition according to claim 28, wherein, in general formula (1-1), L represents an organic group of formula (2), W represents a hydrogen

U.S. Application No. 10/073,985
Reply to Office Action dated July 28, 2003

atom and X represents a hydrogen atom, carboxymethyl group or ethoxycarbonylmethyl group.

Claim 30 (previously presented): The composition according to claim 28, wherein, in general formula (1-1), Y represents an organic group of general formula (10) and n represents an integer of 1 or 2.

Claim 31 (previously presented): The composition according to claim 28, wherein V₁ in general formula (1-1) represents 1-acetimidoyl-4-piperidyloxybenzoyl group, 1-(4-pyridyl)piperidine-4-carbonyl group, 1-(2,3,5,6-tetrafluoropyridine-4-yl)piperidine-4-carbonyl group, 1-(3,5-dichloropyridine-4-yl)-piperidine-4-carbonyl group, 1-(6-chloropyridazine-3-yl)-piperidine-4-carbonyl group, 1-(pyridazine-3-yl)piperidine-4-carbonyl group, 1-(2-chloropyrimidine-4-yl)-piperidine-4-carbonyl group, 1-(pyrimidine-4-yl)-piperidine-4-carbonyl group, 1-(4-pyridine-4-ylmethyl)-piperidine-4-carbonyl group, 1-(4-pyridine-4-carbonyl)-piperidine-4-carbonyl group or 4-methyl-2-pyridyl-4-yl-thiazole-5-carbonyl group.

Claim 32 (currently amended): The composition according to claim 28, wherein, Z₁, in general formula (1-1) represents a carboxyethyl group, ethoxycarbonylethyl group, carboxyvinyl group; ethoxycarbonylvinyl group, carbamoylethyl group, ~~carbamoylvinyl~~, carbamoylvinyl group, carboxyl group, ethoxycarbonyl group, methoxycarbonyl group, sulfoethyl group, sulfovinyl group, phosphonovinyl group, diethoxyphosphorylvinyl group, monoethoxyhydroxyphosphorylvinyl group, sulfonoethyl group, diethoxyphosphorylethyl

U.S. Application No. 10/073,985
Reply to Office Action dated July 28, 2003

group, monoethoxyhydroxyphosphorylethyl group, hydroxymethyl group, hydroxypropyl group or acetoxymethyl group.

Claim 33 (previously presented): The composition according to claim 28, wherein, in general formula (1-1), L represents an organic group of formula (2), Y represents an organic group of formula (10), V₁ represents 1-acetimidoyl-4-piperidyloxybenzoyl group or 1-(4-pyridyl)-piperidine-4-carbonyl group, and Z₁ represents a carboxyethyl group, ethoxycarbonylethyl group, sulfoethyl group, hydroxymethyl group or hydroxypropyl group.

Claim 34 (previously presented): The composition according to claim 28, wherein, in general formula (1-1), L represents an organic group of formulae (2) to (4), and Y represents an organic group of formulae (10) to (13).

Claim 35 (currently amended): The composition according to claim + 28, wherein, in general formula (1-1), when L represents an organic group of any of formulae (2) to (4), V₁ represents a hydrogen atom, benzoyl, benzene sulfonyl, 2-naphthalenesulfonyl, cinnamoyl, piperidinocarbonyl, phenylacetyl, phenylthiocarbonyl or benzimidoyl group which optionally has a substituent(s), or an alkanesulfonyl group, having 1 to 6 carbon atoms, which optionally has a substituent(s); and when L is an organic group of formula (5), V₁ represents an aryl group, having 4 to 10 carbon atoms, which optionally has a substituent(s), when L represents an organic group of any of formulae (2) to (5), the substituents of V₁ include a carboxyl group, alkoxy carbonyl groups having 2 to 7 carbon atoms, carbamoyl

group, mono- or dialkylcarbamoyl groups having 2 to 7 carbon atoms, trialkylamidino groups having 4 to 7 carbon atoms, amidino group, mono- or dialkylamidino groups having 2 to 7 carbon atoms, acyl groups having 1 to 8 carbon atoms, halogeno groups, amino group, mono- or dialkylamino groups having 1 to 6 carbon atoms, arylamino groups having 4 to 6 carbon atoms, alkoxycarbonylamino groups having 2 to 7 carbon atoms, aminoalkyl groups having 1 to 3 carbon atoms, mono- or dialkylaminoalkyl groups having 2 to 7 carbon atoms, N-alkyl-N-alkoxycarbonylaminoalkyl groups having 4 to 10 carbon atoms, piperidyloxy group, iminoalkylpiperidyloxy groups having 6 to 10 carbon atoms, alkoxycarbonylpiperidyloxy groups having 8 to 14 carbon atoms, pyrrolidinyloxy group, iminoalkylpyrrolidinyloxy groups having 5 to 9 carbon atoms, alkoxycarbonylpyrrolidinyloxy groups having 7 to 13 carbon atoms, hydroxycarbonylalkyl groups having 2 to 7 carbon atoms, alkoxycarbonylalkyl groups having 3 to 8 carbon atoms, hydroxycarbonylalkenyl groups having 3 to 7 carbon atoms, alkoxycarbonylalkenyl groups having 4 to 8 carbon atoms, aryl groups having 4 to 10 carbon atoms, arylalkenyl groups having 6 to 12 carbon atoms, alkoxy groups having 1 to 10 carbon atoms, nitro group, trifluoromethyl group, alkyl groups having 3 to 8 carbon atoms, arylsulfonyl groups having 4 to 10 carbon atoms, arylalkyl groups having 5 to 12 carbon atoms, piperazinecarbonyl group, iminoalkylpiperazinecarbonyl groups having 7 to 10 carbon atoms, piperazinesulfonyl group, iminoalkylpiperazinesulfonyl groups having 6 to 9 carbon atoms, piperidylalkyl groups having 6 to 9 carbon atoms, iminoalkylpiperidylalkyl groups having 8 to 12 carbon atoms, piperidylidenealkyl groups having 6 to 9 carbon atoms, iminoalkylpiperidylidenealkyl groups having 8 to 12 carbon atoms, guanidino group, dialkylguanidino groups having 3 to 5 carbon atoms, phosphono group, dialkoxyphosphoryl

U.S. Application No. 10/073,985
Reply to Office Action dated July 28, 2003

groups having 2 to 9 carbon atoms or mono alkoxyhydroxyphosphoryl groups having 1 to 4 carbon atoms,

Y represents any of formulae (10) to (16), n in formulae (10) and (11) represents an integer of 1 or 2, and

Z₁ represents a group of formula (17) or (18) wherein m represents an integer of 1 to 3, and R² represents hydroxyl group, an alkoxy group having 1 to 5 carbon atoms, amino group or a mono- or dialkylamino group having 1 to 6 carbon atoms.

Claim 36 (currently amended): The composition according to claim 34 35, wherein, in general formula (1-1), L represents an organic group of formula (2), W represents a hydrogen atom and X represents a hydrogen atom, carboxymethyl group or ethoxycarbonylmethyl group.

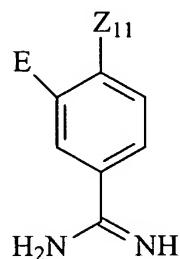
Claim 37 (currently amended): The composition according to claim 34 35, wherein, in general formula (1-1), Y represents an organic group of general formula (10) and n represents an integer of 1.

Claim 38 (currently amended): The composition according to claim 34 35, wherein, V₁ in general formula (1-1) represents 1-acetimidoyl-4-piperidyloxybenzoyl group or 1-(4-pyridyl)piperidine-4-carbonyl group.

Claim 39 (currently amended): The composition according to claim 34 35, wherein, Z_1 in general formula (1-1) represents a carboxyethyl group, ethoxycarbonylethyl group, carboxyvinyl group, ethoxycarbonylvinyl group, carbamoylethyl group or carbamoylvinyl group.

Claim 40 (currently amended): The composition according to claim 34 35, wherein, in general formula (1-1), L represents an organic group of formula (2), Y represents an organic group of formula (10), V_1 represents 1-acetimidoyl-4-piperidyloxybenzoyl group or 1-(4-pyridyl)-piperidine-4-carbonyl group, and Z_1 represents a carboxyethyl group, ethoxycarbonylethyl group or carbamoylethyl group.

Claim 41 (previously presented): A composition comprising:
a) one or more benzamidine compounds of following formula (1-2) or a pharmaceutically acceptable salt thereof:



(1-2)

U.S. Application No. 10/073,985
Reply to Office Action dated July 28, 2003

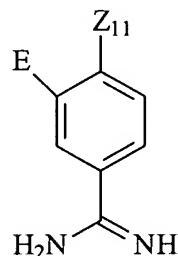
wherein Z_{11} represents carboxyethyl group, ethoxycarbonylethyl group, hydroxymethyl group or hydroxypropyl group, and E represents an oil-soluble organic group; and

b) a pharmaceutically acceptable carrier.

Claim 42 (currently amended): A composition comprising:

a) one or more benzamidine compounds of the formula:

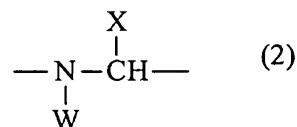
wherein:



(1-2)

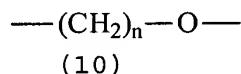
Z_{11} is carboxyethyl, ethoxycarbonylethyl, hydroxymethyl or hydroxypropyl;

E is an oil-soluble organic group of the formula -Y-L-V₁-, wherein L is an organic group of the formula (2):



wherein W is hydrogen, C₁-C₆ alkyl, C₄-C₁₀ aryl or C₅-C₁₂ aralkyl; and X is hydrogen, carboxyl, alkoxy carbonyl having 1 to 3 carbon atoms, alkyl of 1 to 3 carbon atoms which is optionally substituted, benzyl which is optionally substituted, or X and W are bonded together to form a ring, wherein -W-X- is selected from the group consisting of ethylene, trimethylene and tetramethylene;

Y is an organic group of the formula (10):



wherein n is an integer of 0 to 2; and

V₁ is 1-acetamido-4-piperidyloxybenzoyl or 1-(4-pyridyl)piperidine-4-carbonyl; and

b) a pharmaceutically acceptable carrier.

Claim 43 (canceled).

Claim 44 (currently amended): The composition according to claim 42, wherein, in general formula (1-3) (1-2), L represents an organic group of formula (2), W represents a hydrogen atom, X represents a hydrogen atom, V₂ represents 4-(3,4-dimethoxybenzoyl)benzoyl group, 1-(1-methylpyridinium-4-yl)piperidine-4-carbonyl group or 4-(1-methyl-2-imidazoline-2-yl)benzoyl group, and Z₂ represents a hydrogen atom or 2-carboxy-2-oxoethyl group.

U.S. Application No. 10/073,985
Reply to Office Action dated July 28, 2003

Claim 45 (currently amended): The composition according to claim 42, wherein, in general formula (1-3) (1-2), L represents an organic group of formula (2), W represents a hydrogen atom, X represents a hydrogen atom, V₂ represents 4-(1-methyl-2-imidazoline2-yl)benzoyl group, and Z₂ represents 2-carboxy-2-oxoethyl group.